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Abstract: The snow leopard faces multiple threats in the Himalayan region, from habitat degradation, loss of prey, the trade in pelts, parts and live animals, and conflict with humans, primarily pastoralists. Consequently, the populations are considered to be in decline and the species is listed as Endangered in the IUCN's Red List. As a 'flagship' and 'umbrella' species the snow leopard can be a unifying biological feature to raise awareness of its plight and the need for conservation, which will benefit other facets of Himalayan biodiversity as well. Some studies of snow leopards have been conducted in the Himalayan region. But, because of its elusive nature and preference for remote and inaccessible habitat, knowledge of the ecology and behaviour of this mystical montane predator is scant. The available information, however, suggests that snow leopards occur at low densities and large areas of habitat are required to conserve a viable population. Thus, many researchers and conservationists have advocated landscape-scale approaches to conservation within a regional context, rather than focusing on individual protected areas. This regional strategy for WWF's snow leopard conservation program is built on such an approach. The following were identified as important regional issues: 1) international trade in snow leopards and parts; 2) the human-snow leopard conflict; 3) the need for a landscape approach to conservation to provide large spatial areas that can support demographically and ecologically viable snow leopard metapopulations; 4) research on snow leopard ecology to develop long-term, science-based conservation management plans; and 5) regional coordination and dialog. While the issues are regional, the WWF's in the region have developed 5-year strategic actions and activities, using the regional strategies as a touchstone, which will be implemented at national levels. The WWF's will develop proposals based on these strategic actions, with estimated budgets, for use by the network for funding and fund-raising. WWF also recognizes the need to collaborate and coordinate within the network and with other organizations in the region to achieve conservation goals in an efficient manner, and will form a working group to coordinate activities and monitor progress.

A SNOW LEOPARD CONSERVATION PLAN FOR MONGOLIA

Species: Irbis, Snow leopard, *Uncia uncia*

Legal Status in Mongolia: Listed in the Mongolian Red Book as Very Rare (corresponds to the *Endangered* category in the IUCN Red Data Book). No personal or commercial taking is allowed.

Legal Status Worldwide: Listed in the IUCN Red Data Book as Endangered, and on Appendix I of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) which include species considered threatened with extinction. The IUCN Species Survival Commission Cat Specialist Group assign the snow leopard a Global Vulnerability Ranking of Category 2 (highly vulnerable) and actively threatened due to hunting.

Distribution: The range of the snow leopard is restricted to the mountainous regions of Central Asia including the Altai, Tien Shan, Kun Lun, Pamir, Hindu Kush, Karakoram, and Himalaya ranges. It is known to occur in twelve countries, namely Afghanistan, Pakistan, India, Nepal, China, Bhutan, Mongolia, Russia, Tajikistan, Uzbekistan, Kazakhstan, and Kyrgyzstan, with occupied habitat of about 1.6 million km². Snow leopards most frequently occur at elevations between 2,000 and 5,500 m, in areas of steep and broken rocky slopes that support shrub, grass, or steppe vegetation. On the northern limits of their range in Mongolia and Russia they may use elevations as low as 600 m in hilly, and occasionally occur in forested habitat. Rangelwide, population estimates vary from 4,500 to 7,500.

Snow leopards are widely distributed in the mountains of western Mongolia and occur in the Altai Mountains, the Khangai Mountains, the Hanhoohy Uul and Harkhyra ranges, and in isolated mountainous sections of the Trans-Altai Gobi (Figure 1). They are thought to occur in up to 10 aimags and 107 soms with a total range of about 100,000 km². Population estimates vary from about 800 to 1700 animals. Highest densities are thought to be in the South Gobi, Central Transaltai Gobi, and Northern Altai. Remnant populations occur in the Khangai and possibly Khovsgol, although no leopards have been sighted in the latter since the 1960s.

Principal Threats:

Poaching - Despite being afforded complete protection in Mongolia, illegal hunting is a problem of unknown magnitude. Although the illegal kill has been estimated at more than 100 animals per year, there is no clear method for calculating more than a minimum estimate. There are two primary incentives for poaching; for trade, and in retribution for livestock depredation.

Poaching for commercial reasons may well be on the rise as trade with China increases, particularly at border stations where law enforcement is more difficult. The value of snow leopard bones on the Asian medicinal market will likely continue to make this an attractive activity for poachers and traders. An increasing demand for pelts in Eastern Europe may also be driving up prices up for snow leopard hides in Russia.

Killing of snow leopards by herders who have experienced livestock losses is difficult to quantify and it is likely that only a small fraction of kills are made known to authorities. Snow leopards are more likely to kill horses, yaks, and camels than small livestock because large stock is often allowed to roam freely in areas where leopards occur. The economic impact of snow leopard depredation can thus be substantial to an individual herder, despite the fact that overall, herders lose a very small percentage of their herds to the cat. Snow

leopards are not easily hunted in the wild, but can be relatively easy to shoot or trap when they are on livestock kills. Because most herding in snow leopard range is conducted far from towns, kills of the cat are rarely reported to or discovered by authorities.

Habitat Fragmentation - Snow leopards exhibit an extremely patchy and fragmented distribution which may reduce genetic interchange and thus diminish long-term population viability. Within Mongolia this is particularly true with isolated populations in the Khangai, Great Gobi, South Gobi, and other sites. The potential to further fragment snow leopard habitat exists as herding in remote areas increases.

Wild Prey Loss – Competition with domestic stock and poaching are causes for declines in ibex (*Capra ibex*) and argali (*Ovis ammon*), the two primary wild prey species for snow leopards. Marmots are also an important prey item that are also known to be decreasing in several areas due to excessive hunting. As wild prey declines the ability of the area to support snow leopards is reduced, and cat numbers will likely fall. Loss of wild prey can also lead to increased depredation on domestic livestock and more human- snow leopard conflicts.

Disease – Reports of a mange-like skin disease come from the western aimags where some snow leopards have apparently died from the affliction.

Conservation Goals: Snow leopards are a symbol of wilderness and much that is great about Mongolia. They are worthy of conserving for this and future generations. To maintain healthy and sustainable populations of snow leopards in Mongolia it is necessary to:

- Ensure that adequate and representative areas are placed into protected status across the range of snow leopards in Mongolia.
- Enact and enforce national laws, statutes and regulations to protect snow leopards and their prey, and their habitat from degradation.
- Abide by and enforce pertinent international conservation laws and conventions to which Mongolia is a signatory.
- Establish and maintain a snow leopard population monitoring program and database.
- Educate citizens and visitors about conservation issues, and when appropriate, emphasize concerns regarding snow leopards and other endangered species.
- Educate the public and government on the cultural, ecological, and financial values to the country of a healthy snow leopard population.
- Strive to reduce snow leopard-human conflicts, particularly in protected areas and other areas where snow leopards are abundant.

Management Authority: The Mongolian Law on Environmental Protection delegates authority for management of wildlife to the State Administrative Central Organization in charge of nature and environment, which is the Ministry for Nature and Environment (MNE). Pursuant to the Constitution of Mongolia all wildlife is the property of the State.

Relevant Mongolian Laws:

The Law on Special Protected Areas 15 November 1994

The Law on Environmental Protection, 30 March 1995

The Hunting Law, 10 April 1995

Proposed Law on Fauna, 1999

Proposed Revised Hunting Law, 1999

Stakeholders:

National

Ministry for Nature and Environment (MNE)
The Nature Conservation Agency (NCA),
The Endangered Species Commission (ESC),
Mongolian Association for Nature and Environment (MACNE)
The Biological Institute of the Mongolian Academy of Science,
The Biological Faculty of the Mongolian State University,
World Wide Fund for Nature – Mongolia (WWF)
Mongol-An Hunting Organization

International

David Shepherd Conservation Foundation, UK (DSCF)
International Snow Leopard Trust, USA (ISLT)
Wildlife Conservation Society, USA (WCS)
German Technical Cooperation (GTZ) - Mongolia,
Peace Corps – Mongolia (PC)

Current Status and Actions to be Taken:

Legal Issues

Situation - It is currently illegal to hunt, trap, or sell the hide, fur or any other part of a snow leopard (Law on Hunting, Article 4). However, there is no legal restriction on purchasing, owning or possessing snow leopard parts.

Action (1) – MNE, with input from interested Mongolian and international agencies and NGOs, will seek to amend existing law, or enact laws or statutes that make purchase of snow leopard parts illegal, and ownership of snow leopard parts from animals killed after the enactment of the current hunting law (1994) illegal. The law should require that all legally owned snow leopard hides and skulls be registered with the State.

Situation – There is no method to monitor or register existing legally owned snow leopard parts.

Action (2) – MNE, or an entity designated by MNE, will undertake to register all hides and skulls currently owned by government, economic entities, or individuals. MNE will advertise the pending criminalization of owning unregistered snow leopard parts and offer an amnesty period (6 months) for all existing parts to be registered with the government. Each hide or skull will be presented by the owner to the registration authority who will record information on source, method of procurement, size and description of the hide or skull, and will attach a permanent locking numbered tag to the specimen. A small sample of skin or hair may be collected at the time of registration for future genetic studies. Individual owners will be informed in writing at the time of registration that it is illegal to sell or trade the registered part.

Any unregistered hides or skulls encountered by law enforcement agents after the end of the amnesty period will be confiscated and the possessors prosecuted.

Situation – The current penalties are inadequate to deter violations of the hunting law. The Animal Fund values a snow leopard at 80,000 Tugrogs (about \$ 75 USD) and the fine for illegal kill would be double that, or about \$150 USD. Hides can easily bring \$300 in Mongolia and perhaps 10 times that outside. Bones can bring \$xx/kg. Hence, there is very little deterrent in this fee structure.

Action (3) – The basic fine schedule is included in the Hunting Law itself and cannot be amended. However, the penalty for illegal take of an animal includes both the basic fine and

compensation to the Animal Fund. Compensation to the Fund is based on the current value of the animal to the State. The value will be reviewed annually and is sufficiently higher than the market value of the animal parts to deter poaching. Market value can be determined through consultation with international entities who monitor trade in wildlife, such as TRAFFIC.

Situation – Detection of snow leopard poaching and violations of other environmental laws is difficult in remote areas, particularly outside of Protected Areas. Augmentation and training of rangers and nature wardens is a focus of other programs and beyond the scope of this plan.

Action (4) – The existence of the Whistle-blower provision of the Hunting Law will be well advertised. Article 28 of the Hunting Law allows for citizens who report violations to be rewarded with 15% of the imposed fines. There is not now a provision for anonymity of informants. The legal assurance of granting anonymity must be explored.

Situation – Snow leopard hides and bones are valuable on Asian and European black markets. Although Mongolia acceded to CITES in 1994, and customs agents and border guards have received training on enforcement, illegal trade in snow leopard parts occurs and can be expected to increase. Information on the numbers of confiscated hides is not easily obtained and makes monitoring of the problem difficult.

Action (5) – Border trade will be monitored by sporadic and unannounced visits from MNE nature guards. The practicality of using undercover MNE agents should be considered. An agreement will be reached with Customs officials to supply MNE with information on all wildlife trade interceptions promptly (quarterly?). Snow leopard trade data should be provided to MACNE for inclusion in the database (see SLIMS database below). TRAFFIC should be invited to make a survey to determine the level and methods of illegal trade.

Situation – Many Mongolians and visitors remain unaware of national and international laws regulating the sale and export of snow leopard parts. Hides are routinely offered for sale to tourists in Ulaanbaatar as well as in the countryside and an unknown number of hides illegally leave the country each year. An informational multi-media campaign aimed at tourists and Mongolian citizens and focusing on illegal wildlife trade and featuring the snow leopard was initiated in 1998 by WWF, WCS, and DSCF.

Action (6) - Continue and expand on the informational campaign for both visitors and nationals. Establish and publicize through the media campaign a “Hotline” telephone number in Ulaanbaatar for reporting illegal wildlife trade activity.

Monitoring of Snow Leopard Distribution and Abundance

Situation – The status of snow leopard population levels in Mongolia must be monitored over time and between areas to detect changes in numbers and to determine the effectiveness of conservation efforts. The Law on Environmental Protection established the Environmental Information Databank which requires annual input on observations, measurements and research on wildlife. Meeting scientific needs and monitoring requirements for snow leopards is difficult due to their secretive habits and remote habitat. Monitoring snow leopards numbers requires training and use of standardized techniques. The International Snow Leopard Trust (ISLT) has developed the Snow Leopard Information Management System (SLIMS) which includes field techniques and data storage procedures for snow leopard surveys. Many Mongolian biologists have been trained in the SLIMS techniques during two seminars and field training sessions in 1994 and 1998. SLIMS is now being used in most protected areas where snow leopards occur to monitor population trends of leopards and large prey (ibex and argali). SLIMS training in Mongolia has been facilitated by MNE,

UNDP, MACNE, WWF, ISLT and WCS. At the International Snow Leopard Symposium in Xining, China in 1992 MACNE, with the endorsement of MNE, agreed to be Mongolia's cooperating entity and to host the SLIMS database in Mongolia. ISLT currently funds the upkeep of the database, and the salary and field costs of a Mongolian Snow Leopard Conservationist who works directly for MACNE.

Action (6) – Establish a Snow Leopard Expert Working Group made up of knowledgeable individuals from various agencies and academies to advise MNE and others on conservation issues.

Action (7) – To avoid expensive and unnecessary replication, and to ensure comparable results, the MACNE/ISLT database should be recognized as the primary snow leopard data repository for Mongolia by concerned parties. Where ever possible, snow leopard surveys should follow the SLIMS techniques and copies of the results provided to MACNE and their Snow Leopard Conservationist. MACNE should provide consultation in SLIMS techniques and provide standardized dataforms for use. This process should be facilitated by MACNE's Snow Leopard Conservationist with technical input from ISLT (which also agrees to fund this position for an initial period when it will be assumed by MACNE or another appropriate Mongolian NGO). MACNE must also provide to all participating agencies, organizations, and individuals an annual report of survey accomplishments and findings. The SLIMS results should also be entered into the Mongolian Environmental Information Databank at the national, aimag, and som levels.

Situation – The distribution of snow leopards has been described by various researchers in recent years. An accurate map of current range and a schedule of surveys to monitor changes in presence/absence and relative density is needed.

Action (8) – A range map will be produced after consultation of snow leopard experts. MACNE, MNE, and Academy of Science biologists will develop a cooperative monitoring program and schedule of snow leopard surveys.

Situation - Many areas of high density snow leopard populations and important dispersal and travel corridors occur outside of the existing Protected Area System. Degradation of range, particularly important dispersal and travel corridors, may result in further fragmentation of Mongolia's snow leopard population leading to small isolated populations and reduced viability.

Action (9) - Results of snow leopard and prey surveys should be used to identify important habitats that are worthy of consideration for reserve status. MNE should be made aware of these sites for consideration as protected areas. For various reasons, not all such areas will warrant reserve designation, but should be designated by MNE as Important Snow Leopard Range and managed accordingly (see Tiered Management System below).

Situation – Large prey species, including ibex and argali, are the subject of surveys conducted by various agencies. As with snow leopard surveys, an effort should be made to avoid duplication of effort yet meet the needs of each agencies conservation programs.

Action (10) – A agreement will be sought between agencies and organizations active in wildlife monitoring on standard methods for ungulate surveys, and a schedule for conducting them. The agreement will stipulate prompt exchange and sharing of new and existing data. Managers responsible for ungulate conservation or hunting must be involved and appraised of findings, and encouraged to take remedial actions when indicated.

Situation – Population monitoring for both snow leopards and their prey are designed to provide area-specific population trend data. Prompt reporting of downward trends to the management authority (MNE) is required of the monitoring entities.

Action (11) - (It is not clear who the actual management authority is within MNE and what if anything their response might be even if populations were declining rapidly. If it was an over hunting issue of ibex or argali, it would probably be dealt with by the hunting organization involved. But if it is snow leopards, the response chain of command is questionable. This area, both who and what should be done in that event needs to be clarified before completing a draft of this action section.)

Situation – Mongolia is bordered by two other snow leopard containing states, Russia and China. The NW corner of Mongolia is situated in what may be an important travel corridor providing linkages to Chinese, Russian, and Kazakh snow leopard populations. Several areas of important snow leopard habitat in Mongolia are near international borders and the potential for trans-boundary protected areas exists.

Action (12) – Establish formal links with Chinese and Russian agencies, land managers and snow leopard biologists in border areas to facilitate information exchanges and cooperative management ideas.

Situation – The potential exists for disease related reductions in snow leopard numbers and some cats are known to have died from a skin disease in recent years.

Action (13) – An effort will be made to secure tissue samples from any snow leopard thought to have died from, or be infected by disease. Methodology for collection, storage, transport and analyses will be established and made known to rangers and nature protection officers country-wide. Veterinary staff will be consulted once disease has been confirmed and identified to determine what if any measures should be taken to reduce spread of the disease.

People and Snow Leopards

Situation – Currently 20-25% of snow leopard range in Mongolia is under some form of protected status. However, in several protected areas the various restricted use zones (Pristine, Conservation, Limited Use, Travel and Tourism Zones) have yet to be fully defined and regulations on use enforced. Hence, people and livestock remain a component of even Strict Protected Areas and conflicts with predators, including snow leopards, occur. Herders face economic hardship due to depredation.

Action (14) – Establish a Tiered Management System within snow leopard range that encourages people to voluntarily limit their use of certain areas. Such a system could have three Levels:

Level 1 - Provides complete protection to snow leopards. No leopards would be removed, including cats known to depredate on livestock. No economic compensation or incentives would be provided to herders who lose livestock to predators within these areas. This Level would include the Pristine and Conservation Zones of all Strict Protected Areas and the Special Zone of National Conservation Parks (Appendix 2).

Level 2 – Provides complete protection to snow leopards. No leopards would be removed, including cats known to depredate on livestock. Herders who legally use this area must agree to certain grazing conditions and tolerate losses to snow leopards in exchange for establishment of an economic incentive program (see Appendix 3, Irbis Enterprises) or compensation for losses. This Level would include the Limited Use and Buffer Zones of Strict Protected Areas (when permits have been granted), all National Conservation Park lands except for their Special Zone, and Nature Reserves classified as Ecological or Biological Reserves. It would also include lands that fall outside of protected areas but have been designated by MNE as Important Snow Leopard Habitat or snow leopard travel corridors. Identification of such habitat would come from SLIMS

survey results and other research. (Note – although livestock husbandry is allowed by law in all areas listed in Level 2 lands, it would be undertaken at the herder's own risk).

Level 3 – Provides for the removal of depredating snow leopards by government agents after confirmation of a problem. This Level would include all lands that have not been identified as Important Snow Leopard Habitat or travel corridors by MNE and that fall outside of reserves, or within Paleontological or Geological Reserves, and Natural Monuments.

Situation – Snow leopards take more horse, yak, and camels than other domestic stock because large stock tends to be grazed in mountainous areas without protection by herders. Small stock is taken less often but occasionally losses can be substantial when leopards enter corrals at night.

Action (15) – Research will be conducted on alternative livestock protection methods and information disseminated to herders through a snow leopard conservation education program (see next item). Information exchange will be sought with other Central Asian states where depredation is also a problem to determine best practices.

Situation – Various entities have produced environmental education materials that pertain directly to snow leopard conservation and initiated their use in Mongolia including ISLT, the WCS, WWF, UNDP, GTZ (?) and others.

Action (16) – A review of available materials and programs will be undertaken by a single agency and a comprehensive snow leopard conservation education program developed and made available, along with training in its use, to educators in snow leopard range soms and aimags. Educational materials should be focused on everyone from school children to adults. Informational seminars on improved herding practices that reduce likelihood of depredation by snow leopards and wolves should be included.

Assessment of Progress: Progress toward goals of this Plan will be monitored one year after implementation by a team representing MNE, MACNE, and WWF. A report on accomplishments and shortcomings will be provided to all stakeholders. The team will evaluate the need to reconvene a stakeholders meeting to revise and update the plan, and will decide on a timeframe for further progress monitoring and reports.